

10/050,454

F0604

CERTIFICATE OF FACSIMILE TRANSMISSION (37 CFR 1.8a)

I hereby certify that this correspondence (along with any paper referred to as being attached or enclosed) is being sent via facsimile on the date shown below to: (703) 872-8318, Mail Stop Non-Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Date: _____

(Signature of person faxing paper)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application

| | | | | |
|---------------|---|---|-----------|--------------|
| Applicant(s): | Singh, <i>et al.</i> | : | Art Unit: | 2814 |
| Serial No.: | 10/050,454 | : | Examiner: | Hoa B. Trinh |
| Filed: | January 16, 2001 | : | | |
| Title: | PROCEDURE TO DETERMINE SEED LAYER THICKNESS OF TRENCH SIDEWALLS | | | |

DECLARATION UNDER 37 C.F.R. §1.131

Mail Stop Non-Fee Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Bhanwar Singh, declare and say as follows:

(1) I am the inventor of the claims of the above-identified patent application. This Declaration is submitted to establish conception of the invention described and claimed in the above-captioned application in the United States at a date prior to May 11, 2001, which is the date of patent of Cooney III et al. (U.S. Patent 6,429,524 B1) and

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to establish diligence from at least just prior to May 11, 2001 until constructive reduction to practice, January 16, 2002.

(2) To establish conception of the invention claimed in the above-identified application prior to May 11, 2001, copies of the relevant portions of an Invention Disclosure describing the invention are enclosed with this Declaration as Exhibit A. Conception and the written description of the invention contained in the Exhibit A were completed prior to May 1, 2001 in this country. Certain information, such as the actual dates and proprietary information, contained on the documents has been removed from the copies.

(3) Exhibit A, an Invention Disclosure, describes with words and drawings the invention captured by the claims. In particular, the Invention Disclosure indicates X-ray reflectometry is performed to determine the sufficiency of a copper seed layer in trench sidewalls formed over a barrier layer, such as titanium. The drawings schematically show a cross-section of a wafer being processed as well as the system employed to execute the determination.

(4) In view of Exhibit A, it can be seen that the invention claimed in the present application was indeed conceived prior to May 11, 2001.

(5) During April, 2001 and after the date of the Invention Disclosure (which is before May 11, 2001), discussions concerning the Invention Disclosure with the drafting attorney took place, as needed, for the purpose of ensuring the drafting attorney fully understood the contents of the Invention Disclosure.

(6) On or about June 22, 2001, I received a draft version of a patent application for the instant invention from the drafting attorney.

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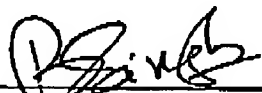
(7) On or about July 31, 2001, I received another draft version of a patent application for the instant invention from the drafting attorney.

(8) On or about July 31, 2001, discussions to finalize the patent application took place with the drafting attorney.

(9) On or about August 7, 2001, the finalized patent application with formal papers was received.

(10) The executed formal papers and the finalized patent application were filed by the drafting attorney on January 16, 2002.

I, Bhanwar Singh, hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued therein.


Bhanwar Singh

Jan 12, 2004
Date

EXHIBIT A

TOPIC: Integrated Equipment Process Control--Thin Film, Etch, Litho, Diffusion
 Technical Leader: Bhanwar Singh
 ROOM C-10

PRIORITY

A ☐ B ☐
 C ☒ D ☐

AMD INVENTION DISCLOSURE

TLD ID#

Rec'd date

Sunnyvale x42110, return to MS68.

Texas x55964 return.

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Project: ☐, Product: ☐, Process: ☐, Technology ☐, to which the invention applies (ia)

List 2 to 5 key words useful to search by to find patents or art related to this invention:

Working title of invention: Procedure to determine local layer thickness of trench side walls

INVENTOR/SESSION PARTICIPANT ADDRESS INFORMATION IS ON THE NEXT PAGE (1A)

Inventor's signature: _____ date: _____
 Inventor's printed full name: Bhanwar Singh Citizenship: _____
 Employee #: _____ Extension: _____ Mail stop: _____ Home telephone: () _____
 Division: _____ Directorate: _____ Dept #: _____ Dept: _____ Manager: _____
 Residence address: _____
 Post Office address: _____

Co-Inventor's signature: _____ date: _____
 Co-Inventor's printed full name: MIKE Citizenship: _____
 Employee #: _____ Extension: _____ Mail stop: _____ Home telephone: () _____
 Division: _____ Directorate: _____ Dept #: _____ Dept: _____ Manager: _____
 Residence address: _____
 Post Office address: _____

Co-Inventor's signature: _____ date: _____
 Co-Inventor's printed full name: BHANATH Citizenship: _____
 Employee #: _____ Extension: _____ Mail stop: _____ Home telephone: () _____
 Division: _____ Directorate: _____ Dept #: _____ Dept: _____ Manager: _____
 Residence address: _____
 Post Office address: _____

Co-Inventor's signature: _____ date: _____
 Co-Inventor's printed full name: RAM Citizenship: _____
 Employee #: _____ Extension: _____ Mail stop: _____ Home telephone: () _____
 Division: _____ Directorate: _____ Dept #: _____ Dept: _____ Manager: _____
 Residence address: _____
 Post Office address: _____

List on additional sheet if there are more co-inventors and list total number of inventors here: _____

Name(s) of attorney(s) preferred by inventor(s) to prepare patent application, if known:

LAW FIRM: AMIN, ESCHWEILER & TUROCY

LAWYERS: Himanshu Amin and Gregory Turocy

Witness 1 initial: [Signature] Witness 2 initial: _____

IDP COVER SHEET--Litho Processing

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AMD INVENTION DISCLOSURE

Title ID#

Rec'd date

Summary: x42110, return to MS 68,

Texas x55964 return to MS 562

-----note-----this section format is not password protected in order to allow insertion of drawings, tables, etc-----

Identify known relevant art (patents, publications, products):

State the problem solved by this invention: Determines if copper seed layer coverage in trench sidewalls is suitable. Copper seed layers are employed to form copper layers. If seed layer coverage is not sufficient, voids may form in the resulting copper layer. The voids may result in poor device performance.

Brief description and /or sketch of invention (attach copies of patent notebook pages, drawings or reports)
After a copper seed layer is formed, X-ray reflectometry is performed to determine sufficiency of seed layer coverage. A library of reflection beam signatures is employed for comparison with an actual signature to determine if seed layer coverage is appropriate. The invention may be employed even after the copper layer is formed.

Figs. 1a-c illustrates a seed layer comparison system.

Patent notebook #

Page numbers:

Number of drawings:

Witness 1 initial:

Witness 2 initial:

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Page 2

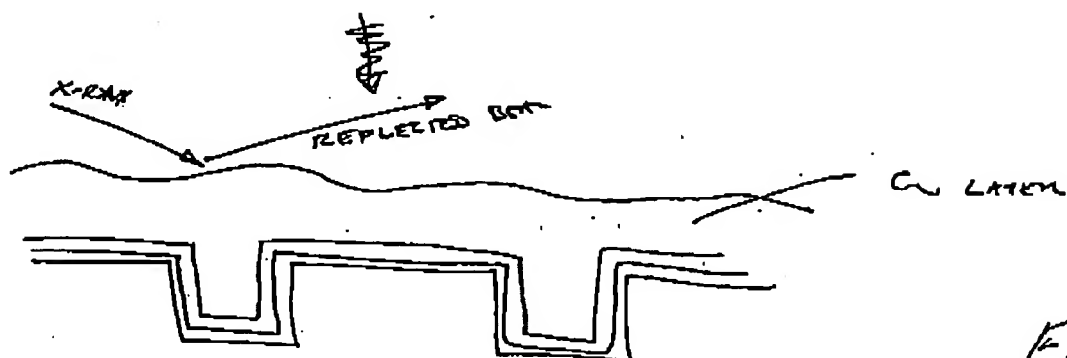
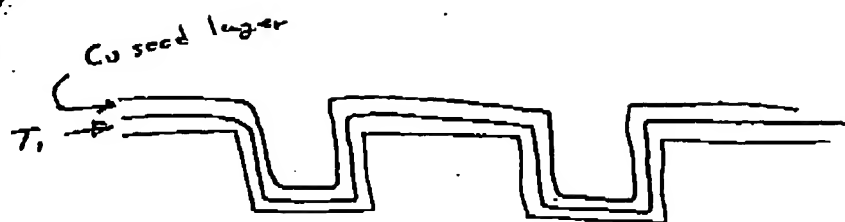


Fig. 1a

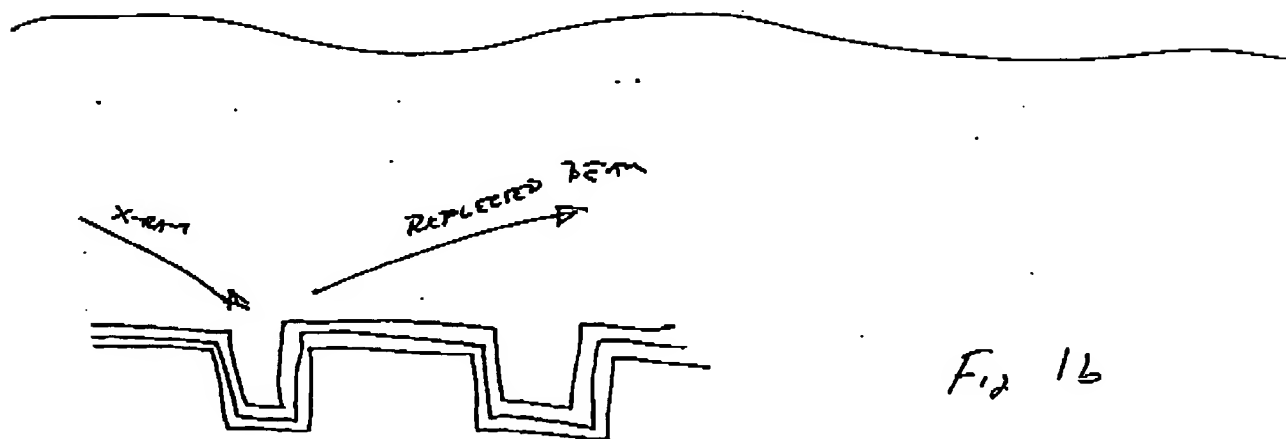


Fig. 1b

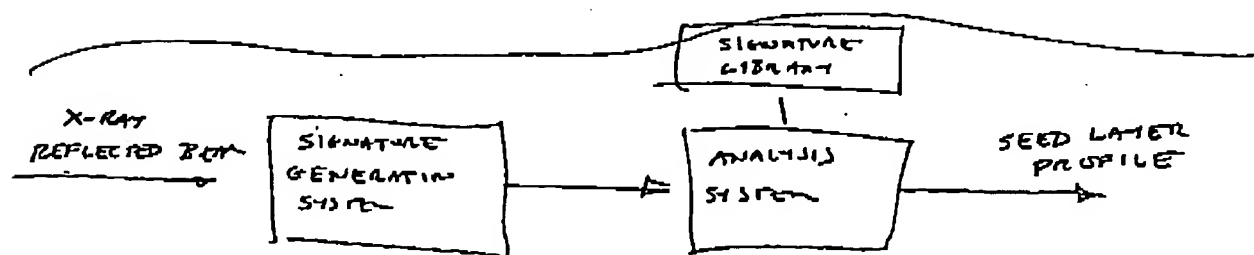


Fig. 1c